

## REMARKS

Favorable reconsideration of this application is respectfully requested in view of the following remarks.

By this Amendment, the previously pending claims are canceled without prejudice in favor of new Claims 77-109. Thus, Claims 77-109 are now the pending claims in this application, with Claims 77, 78, 107 and 108 being the only independent claims now under consideration. No new matter is added by this Amendment.

Independent Claim 77 recites an RFID tag, comprising a first substrate having oppositely facing first and second surfaces, a second substrate having oppositely facing first and second surfaces, the first surface of the second substrate facing the second surface of the first substrate, an RFID integrated circuit fixed to the first substrate so that the RFID integrated circuit and the first substrate together form an RFID integrated circuit module, an RFID antenna disposed on the first surface of the second substrate and electrically coupled to the RFID integrated circuit via a non-contact coupling, an electrically conductive region disposed on the second surface of the second substrate and electrically coupled to the RFID integrated circuit via a non-contact coupling, an adhesive layer between a surface of the RFID integrated circuit facing the second substrate and the first surface of the second substrate, the adhesive layer attaching the RFID integrated circuit module to the second substrate, and an attachment layer on the second surface of the second substrate for attaching the second substrate to a receiving surface.

Independent Claim 78 defines an RFID tag, comprising a first substrate having oppositely facing first and second surfaces, a second substrate having oppositely facing first and second surfaces, the first surface of the second substrate

facing the second surface of the first substrate, an RFID integrated circuit fixed to the first substrate so that the RFID integrated circuit and the first substrate together form an RFID integrated circuit module, an RFID antenna disposed on the second surface of the second substrate and electrically coupled to the RFID integrated circuit via a non-contact coupling, an adhesive layer between a surface of the RFID integrated circuit facing the second substrate and the first surface of the second substrate, the adhesive layer attaching the RFID integrated circuit module to the second substrate, and an attachment layer on the second surface of the second substrate for attaching the second substrate to a receiving surface.

Conventionally, the presence of the RFID integrated circuit on the tag can slow the tag production process, since the RFID integrated circuit introduces a bump in the tag profile and is sensitive to physical and electrostatic damage. According to independent Claims 77 and 78, the RFID integrated circuit is fixed to the first substrate so that the RFID integrated circuit and the first substrate together form an RFID integrated circuit module. In this configuration, the RFID integrated circuit module can be applied to the second substrate via the adhesive layer in the final stages of tag manufacture. This allows the remainder of the tag (i.e. the tag minus the second substrate and RFID integrated circuit) to be produced using high speed tag manufacturing processes as discussed in lines 13-18 on page 18 of the specification.

The combination of International Application Publication No. WO 01/71848 A1 to Atherton and U.S. Patent No. 6,181,287 to Beigel fails to disclose or suggest the combination of features recited in independent Claims 77 and 78.

The label 1000 disclosed by the Atherton reference has a substrate layer 1001 and a tamper track 1005 on one side of the substrate layer 1001 as shown in

Fig. 10B of the reference. As further illustrated, the tamper track 1005 is electrically coupled to an electronic chip 1002 and an antenna 1003, which are on the opposite side of the substrate layer 1001, via electrical through connects 1004.

To begin with, the Official Action says that the Atherton's label 1000 does not have the claimed second substrate (see page 10 of the Official Action). The Official Action takes the position that the second substrate is disclosed by Beigel in Fig. 7 of that reference.

Here, Beigel discloses a tri-laminar RFID device having a tri-laminar structure 70. The tri-laminar structure 70 has an upper lamina 72, a lower lamina 74, an intermediate lamina 76, and a chip 10 provided between the upper lamina 72 and the intermediate lamina 76. The Official Action takes the position that upper lamina 72 corresponds to one substrate ("first substrate") and that the intermediate lamina 76 corresponds to another substrate ("second substrate"). However, Beigel does not disclose that an adhesive layer is disposed between a surface of the chip 10 and the intermediate lamina 76 ("second substrate"). Rather, the chip 10 appears to be secured via terminals 17 provided between the chip 10 and the intermediate lamina 76.

Further, the Atherton reference does not disclose the claimed the RFID integrated circuit module. That is, the electronic chip 1002 is not fixed to a substrate, such as the top layer 1007, so that the electronic chip 1002 and the top layer 1007 together form an RFID integrated circuit module. The top layer 1007 is simply applied over the substrate 1001, the electronic chip 1002 and the antenna 1003 as discussed in lines 32-35 on page 15 of the Atherton reference. In other words, the electronic chip 1002 is not provided together with the top layer 1007 as a *module*.

Nor would the electronic chip 1002 be provided together with Beigel's upper lamina 72 as a *module* even if the label 1000 included Beigel's upper lamina 72.

In addition, there is no adhesive layer between a surface of the electronic chip 1002 facing the substrate 1001 and the first surface of the substrate 1001 as defined in independent Claims 77 and 78 here. Nor would there have been any reason to provide an adhesive layer between a surface of the electronic chip 1002 and the substrate 1001. The electronic chip 1002 is secured in place on the tamper track 1005 via the top layer 1007 that is coated over the top of the label 1000 (see Fig. 10B of the Atherton reference). Moreover, any adhesive between the top layer 1007 and the substrate 1001 does not attach an RFID integrated circuit *module* to the substrate 1001.

Accordingly, the combination of the Atherton reference and Beigel fails to disclose, and would not have rendered obvious, an RFID tag having the claimed combination of feature, including an RFID integrated circuit fixed to the first substrate so that the RFID integrated circuit and the first substrate together form an RFID integrated circuit module, and an adhesive layer between a surface of the RFID integrated circuit facing the second substrate and the first surface of the second substrate, the adhesive layer attaching the RFID integrated circuit module to the second substrate as defined in independent Claims 77 and 78. Thus, independent Claims 77 and 78 are patentable over the Atherton reference and Beigel for at least the above reasons.

Dependent Claims 79-106 also are presented for consideration and recite additional features not disclosed by the applied references. For instance, Claims 105 and 106 recite an adhesion modifying layer between the second surface of the first substrate and the RFID integrated circuit.

Neither Atherton nor Beigel discloses or suggests an adhesion modifying layer between the second surface of the first substrate and the electronic chip 1002. For instance, the Official Action acknowledges that Atherton fails to disclose the second substrate. Thus, there is no need for the claimed adhesion modifying layer in Atherton. Further, there is no reason to include the adhesion modifying layer with the chip 10 in Beigel's tri-lamina structure 70, as Beigel is not concerned with tamper detection. Thus, Claims 105 and 106 are patentable over Atherton and Beigel for at least these additional reasons.

Claims 103 and 104 recite that a surface area of the second surface of the fist substrate is smaller than a surface are of the first surface of the second substrate.

This configuration provides another manufacturing benefit in that the RFID integrated circuit "module" on the second substrate can be produced in large volumes more cost-effectively due to the fact that there will be more RFID integrated circuits placed per unit area of the second substrate material as discussed, for example, lines 20-25 on page 18 of the specification.

Beigel fails to disclose that the upper lamina 72 ("first substrate") has a smaller surface area than the top or bottom surface of the intermediate lamina 76 ("second substrate"), and is not concerned with manufacturing the tri-laminar structure 70 in two processes as discussed above. Thus, independent Claims 103 and 104 are patentable over the Atherton reference and Beigel for at least these additional reasons.

Independent Claims 107 and 108 are presented for consideration and each recite a method of manufacturing an RFID tag. The methods include aspects similar to those discussed above in Claims 77 and 78 which are not disclosed or suggested by the Atherton reference and Beigel. Accordingly, independent Claims 107 and 108

are patentable over the Atherton reference and Beigel for at least the reasons discussed above.

U.S. Patent No. 6,859,745 to Carr et al. ("Carr") fails to cure the above discussed deficiencies of Atherton reference and Beigel.

Should any questions arise in connection with this application or should the Examiner believe that a telephone conference with the undersigned would be helpful in resolving any remaining issues pertaining to this application the undersigned respectfully requests that he be contacted at the number indicated below.

Respectfully submitted,

BUCHANAN INGERSOLL & ROONEY PC

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By: /David R. Kemeny/  
Matthew L. Schneider  
Registration No. 32814

David R. Kemeny  
Registration No. 57241

**Customer No. 21839**  
703 836 6620